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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/579,576	05/25/2000	Ho-Jin Kwcon	003364.P048	7384

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EXAMINER
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WILLS, MONIQUE M

ART UNIT	PAPER NUMBER
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1746

DATE MAILED: 11/16/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/579,576

Applicant(s)

KWEON ET AL.

Examiner

Monique M. Wills

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 03 November 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1, 5 and 8-35 is/are pending in the application.
- 4a) Of the above claim(s) 10-15 and 23-28 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1, 5, 8-9, 16-22 & 29-35 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 May 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
  - 2) ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Request for Continued Examination*

The request filed on November 3, 2005 for a Request for Continued Examination (RCE) under 37 CFR 1.114 based on parent Application No. 09/579,576 is acceptable and a RCE has been established. An action on the RCE follows.

### *Response to Amendment*

This Office Action is responsive to the RCE filed November 3, 2005. The following rejections are maintained:

- Claims 1, 5, 16, 17, 20, 21, 29, 30, 33 & 34 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Miyasaka U.S. Patent 5,869,208, in view of Kawakami et al. U.S. Pat. 5,641,591.
- Claims 1, 5, 16, 17, 20, 21, 29, 30, 33 & 34 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Saidi et al., U.S. Patent 5,851,696 in view of Kawakami et al. U.S. Pat. 5,641,591.

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- Claims 22 & 35 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Saidi et al., U.S. Patent 5, 851,696 in view of Kawakami et al. U.S. Pat. 5,641,591 and further in view of Matsubara U.S. Pub. 2001/0010807.
- Claims 1, 5, 8-9, 16 -19 & 29-32 stand rejected under 35 U.S.C. 103(a) being unpatentable over Gosho et al. U.S. Patent 6,589,69490 and further in view of Kawakami et al. U.S. Pat. 5,641,591.

A brief reiteration is recited below.

***Claim Rejections – 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 5, 16, 17, 20, 21, 29, 30, 33, 34 & 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miyasaka U.S. Patent 5,869,208, in view of Kawakami et al. U.S. Pat. 5,641,591.

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With respect to claims 1 & 5, Miyasaka teaches: a physical mixture of a lithiated transition metal compound (col. 11, lines 10-20); a powder metal including *aluminum* (col. 8, lines 10-15); a carbon black conductive agent (col. 8, lines 5-10); a binder (col. 8, lines 30-45); an organic electrolyte solution (col. 8, lines 48-53); the active material includes  $\text{LiCoO}_2$ , embracing formula 7, when B is Co and A is O (col. 5, lines 15-25); and the metal additive is 2 to 15 wt % of the active material (col. 8, lines 15-20). With respect to claims 16, 17, 29 & 30, the active material includes  $\text{LiCoO}_2$  embracing  $\text{LiBA}_2$  and  $\text{LiBO}_{2-z}\text{A}_z$  when B is Co and A is O (col. 8, lines 15-25). With respect to claims 20, 21, 33 & 34, the active material is  $\text{LiCoNiO}_2$ , embracing  $\text{LiNiCoA}_2$  and  $\text{LiNiCoO}_{2-z}\text{A}_z$  when A is oxygen (col. 8, lines 15-25).

Miyasaka is silent to an electrode additive of at least one of Si, B, Ti, Ga, Ge, Ca, Mg, Sr and Ba (claims 1 & 5).

However, Kawakami teaches the equivalence of aluminum and magnesium metallic powder as conductive agents in electrode materials for improving electrode conductivity (claims 1, 5 &). See column 14, lines 45-55.

Miyasaka and Kawakami are analogous art, because they are from the same field of endeavor, namely, fabricating lithium lithium electrochemical cells.

Therefore, the subject matter as a whole would have been obvious to one having ordinary skill in the art at the time the instant invention was made

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because even though Miyasaka does not teach titanium conductive agents, Kawakami teaches that aluminum and magnesium are art recognized equivalent materials for use as conductive agents in lithium transition metal oxide cathodic materials, and therefore one having ordinary skill in the art would have substituted one conductive agent for the other.

*Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 5, 16, 17, 20, 21, 29, 30, 33 & 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Saidi et al., U.S. Patent 5, 851,696 in view of Kawakami et al. U.S. Pat. 5,641,591.

Saidi teaches a rechargeable lithium battery (abstract). With respect to claims 1 & 5, Saidi teaches a slurry composition comprising: a physical mixture of a positive active material including *LiMnO<sub>4</sub>*, *LiCoO<sub>2</sub>*, *LiNiO<sub>2</sub>*, *LiNiVO<sub>4</sub>*,

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*LiCoVO<sub>4</sub>, LiCoNiO<sub>2</sub> or LiTmO<sub>2</sub>* where Tm is a transition metal or combination of transition metals (col. 6, lines 10-20); a binder (col. 9, lines 10-15); a carbon conductive agent (col. 9, lines 15-20); and an organic solvent (col. 9, lines 65-68); coated onto a current collector and dried (col. 9, lines 15-21 & 60-68); and the positive active material includes LiCoO<sub>2</sub> (instant formula 3), LiNiO<sub>2</sub> (instant formula 3) or LiCoNiO<sub>2</sub> (instant formula 11). See column 6, lines 10-20. With respect to claims 16 & 29, the active material is LiCoO<sub>2</sub> embracing the formula Li<sub>x</sub>BA<sub>2</sub> when x=1 and A is oxygen (col. 6, lines 10-20). With respect to claims 17 & 30, the active material is LiCoO<sub>2</sub> embraces the formula Li<sub>x</sub>BO<sub>2-z</sub>A<sub>z</sub> when x=1 and A is oxygen (col. 6, lines 10-20). With respect to claims 20 & 33, the active material is LiCoNiO<sub>2</sub>, embraces the formula Li<sub>x</sub>NiCoA<sub>2</sub> when x=1 and A is oxygen (col. 6, lines 10-20). With respect to claims 21 & 34, the active material is LiCoNiO<sub>2</sub>, embraces the formula Li<sub>x</sub>NiCoO<sub>2-z</sub>A<sub>z</sub> when x=1 and A is oxygen (col. 6, lines 10-20).

Saidi is silent to an electrode additive of at least one of Si, B, Ti, Ga, Ge, Ca, Mg, Sr and Ba (claims 1 & 5), in an amount of 0.01 to 10wt% (claims 1 & 5).

However, Kawakami teaches that it is conventional to employ magnesium conductive agents in electrodes of lithium cells to improve conductivity of the electrode (claims 1 & 5). See column 14, lines 45-55. With respect to claims 1

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& 5, the conductive agent may be added in an amount up to 10% by weight (col. 4, lines 15-30).

Saidi and Kawakami are analogous art because they are from the same field of endeavor, namely, fabricating rechargeable lithium cells.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the instant invention was made to employ the magnesium conductive agent of Kawakami in the positive electrode of Saidi, in order to increase conductivity of the positive electrode.

### *Claim Rejections – 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 22 & 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Saidi et al., U.S. Patent 5, 851,696 in view of Kawakami et al. U.S. Pat. 5,641,591 and further in view of Matsubara U.S. Pub. 2001/0010807.



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Saidi in view of Kawakami teach an active slurry composition as described hereinabove. Saidi teaches a positive active material comprising  $\text{LiTmO}_2$ , where Tm is a combination of transition metals (col. 6, lines 15-20).

Saidi does not expressly disclose a lithium nickel/cobalt material of the formula  $\text{Li}_x\text{Ni}_{1-y-z}\text{Co}_y\text{M}''\text{A}_2$ .

However, Matsubara teaches that it is conventional to employ lithium nickel/cobalt oxides of the formula  $\text{Li}_y\text{Ni}_{1-x}\text{Co}_x\text{M}_x\text{O}_2$  where M is Al, Fe, Mn where y is  $0.9 < y < 1.3$  and  $0 < x < 0.5$  (¶ 13-14). This compound improves the charging and discharging cycle characteristics of the positive electrode so that it retains high battery capacity (abstract).

Therefore, the invention as a whole would have been obvious to one of ordinary skill in the art at the time the instant invention was made, because even though Saidi does not specifically teach  $\text{Li}_x\text{Ni}_{1-y-z}\text{Co}_y\text{M}''\text{A}_2$ , Matsubara teaches that material of this formula improves the charging and discharging cycle characteristics and battery capacity.

*Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 5, 8-9, 16 -19 & 29-32 are rejected under 35 U.S.C. 103(a) being unpatentable over Gosho et al. U.S. Patent 6,589,69490 and further in view of Kawakami et al. U.S. Pat. 5,641,591.

Gosho teaches a positive active material comprising  $\text{LiCoO}_2$ ,  $\text{LiNiO}_2$ ,  $\text{LiCo}_{1-x}\text{Ni}_x\text{O}_2$ , wherein  $0.1 < x$  and  $y < 0.1$  (col. 6, lines 15-23). With respect to claims 1 & 5, The active material is prepared by mixing a binder, carbon black and N-methyl- $\gamma$ -pyrrolidone to form a slurry (col. 19, lines 45-55), the slurry is applied onto both surfaces of a current collector and dried (col. 19, lines 45-55), and the positive active material includes  $\text{LiCoO}_2$  (instant formula 3),  $\text{LiNiO}_2$  (instant formula 3) or  $\text{LiCoNiO}_2$  (instant formula 11). See column 6, lines 15-23. With respect to claims 8 & 9, the organic solvent is N-methylpyrrolidone (col. 19, lines 50-55). With respect to claims 16 & 29, the active material is  $\text{LiCoO}_2$  embracing the formula  $\text{Li}_x\text{BA}_2$  when  $x=1$  and A is oxygen (col. 6, lines 15-23).

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With respect to claims 17 & 30, the active material is  $\text{LiCoO}_2$  embracing the formula  $\text{Li}_x\text{BO}_{2-z}\text{A}_z$  when  $x=1$  and A is oxygen (col. 6, lines 15-23). With respect to claims 18, 19, 31 & 32, the active material is  $\text{LiNi}_{1-x}\text{Al}_x\text{O}_2$ , embracing the formula  $\text{Li}_x\text{B}_{1-y}\text{M}''_y\text{A}_z$  when B is Ni,  $\text{M}''$  is Al and A is O (col. 6, lines 15-23).

Gosho is silent to an electrode additive of at least one of Si, B, Ti, Ga, Ge, Ca, Mg, Sr and Ba (claims 1 & 5) in an amount of 0.01 to 10 wt% (claims 1 & 5).

However, Kawakami teaches that it is conventional to employ magnesium conductive agents in electrodes of lithium cells to improve conductivity of the electrode (claims 1 & 5). See column 4, lines 15-30. Further, with respect to claims 1 & 5, the conductive agent may be added in an amount up to 10% by weight (col. 4, lines 15-30).

Gosho and Kawakami are analogous art because they are from the same field of endeavor, namely, fabrication rechargeable lithium cells.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the instant invention was made to employ the magnesium conductive agent of Kawakami in the positive electrode of Gosho, in order to increase conductivity of the positive electrode.

*Response to Arguments*

Applicant contends that Kawakami does not cure the deficiencies of the primary references Miyasaka, Saidi and Gosho, because there was a failure to establish a prima facie case of obviousness. Specifically, there was no motivation to combine Kawakami with said primary references. However, the Examiner recognizes that references cannot be arbitrarily combined and that there must be some reason why one skilled in the art would be motivated to make the proposed combination of primary and secondary references. *In re Nomiya*, 184 USPQ 607 (CCPA 1975). However, there is no requirement that a motivation to make the modification be expressly articulated by the references. The test for combining references is what the combination of disclosures taken as a whole would suggest to one of ordinary skill in the art. *In re McLaughlin*, 170 USPQ 209 (CCPA 1971). References are evaluated by what they suggest to one versed in the art, rather than by their specific disclosures. *In re Bozek*, 163 USPQ 545 (CCPA 1969). In the instant case, Kawakami teaches the equivalence of aluminum and magnesium as conductive material in electrodes of lithium batteries. The selection of a known material based on its suitability for its intended use supported a prima facie obviousness determination in *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945). See also

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In re Leshin, 227 F.2d 197, 125 USPQ 416 (CCPA 1960) (selection of a known plastic to make a container of a type made of plastics prior to the invention was held to be obvious). Therefore, the fact that Kawakami teaches the equivalence of aluminum and magnesium as equally suitable as conductive materials establishes a prima facie case of obviousness.

### *Conclusion*

Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Monique Wills whose telephone number is (571) 272-1309. The Examiner can normally be reached on Monday-Friday from 8:30am to 5:00 pm.

If attempts to reach Examiner by telephone are unsuccessful, the Examiner's supervisor, Michael Barr, may be reached at 571-272-1414. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information

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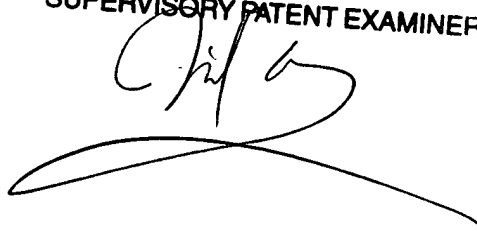
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MW

11/14/05

**MICHAEL BARR**  
**SUPERVISORY PATENT EXAMINER**

A handwritten signature in black ink, appearing to read 'Michael Barr', is written over the printed name and title. The signature is stylized with a large, sweeping loop at the end.